XMM-Newton CCF Release Note

XMM-CCF-REL-60

OM Photometry

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1 CCF components

| Name of CCF	VALDATE	List of Blocks changed	CAL VERSION	XSCS flag
OM_COLORTRANS_0005	2000-01-01T00:00:00	COLORMAG		No
OM_PHOTTONAT_0003	2000-01-01T00:00:00	COINCIDENCE		Yes

2 Changes

The structural changes are introduced to make the COLORTRANS file compatible to the CAL/SAS changes which are required to improve on the OM photometry. To this aim coincidence loss correction is i ntroduced in PHOTTONAT file as well.

The keyword ALGOID is added to allow backwards compatibility. The APU-*filter* keywords are added to the COLORMAG extension. The keyword contains the aperture radius used in the photometric calibration analysis of the filter.
The additional column BRANCH is added to the COLORMAG extension. The value in column BRANCH is used to indentify the different branches of the colour equations.

So far these changes only affect the structure of the COLORTRANS file. The actual values of the colour transformation are not yet changed and still contain the numbers from the previous iss-sue OM_COLORTRANS_0004, which are a parametrization of the simulated colour transformation based on inflight knowledge using the method by Harris. Therefore the ALGOID keyword is set to 0. Once the improved COLORTRANS values are filled in, which will make use of the ground calibration programme, the ALGOID keyword has to be set to 1. The new values are expected not later than March 2001.

An additional extension COINCIDENCE was added. This extension contains the coefficients for
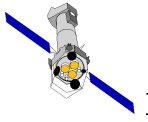
the empiric linearity correction curve. The coefficients in the CCF are the coefficients of a polynomial function of the count to frame ratio (CFRR). The coefficients were derived in a comparison between OM inflight and photometric ground based data. The accuracy of the coincidence loss correction is improved. Currently the polynomial is of 4th order with only three independent coefficients. Due to the boundary conditions a0 is fixed to 1 and a1 is fixed to minus the sum of the independent coefficients.

3   Scientific Impact of this Update

None.

4   Estimated Scientific Quality

As before:

The colour transformation of model spectra was found to be generally good at the 0.1 mag level or even better. However there are outliners, which need inspection. The colour transformation gets worse as one goes towards late type spectra (B-V > 1). Recommendation: assume accuracy of 0.5 if redder than B-V >1.0.
The accuracy of U-B transformation is generally better than 0.1 mag, however there are again some outliners, which need inspection. The U-V transformation is generally better than 0.1 mag, but there are some outliners for U-V > 1. B-V transformation is generally better than 0.05 mag for the range $-0.5 < B - V < 1$. Towards the red, i.e. with increasing colour index the transformation gets worse with B-V residuals up to -0.3 mag. The V magnitude is good within 0.05 mag, with some outliners with a residual up to 0.2 mag.

5   Acknowledgements